MANUFACTURE OF MIS FIELD-EFFECT

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Patent Number:

JP1082671

Publication date:

1989-03-28

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Requested Patent:

JP1082671

Application Number: JP19870242134 19870925

Priority Number(s):

IPC Classification:

H01L29/78; H01L21/318

EC Classification:

EC Classification:

Equivalents:

Abstract

PURPOSE:To improve reliability and to reduce irregularities in characteristics by forming an oxide layer as a protective film against a resist developer on an AIN film in a MIS FET having AIN as a gate insulating film on a III-V compound semiconductor substrate. CONSTITUTION:An n<+> type layer 2 is formed by atomic layer epitaxial growth as a source and drain electrode contact layer on a semi-insulating InP substrate 1. Then, an AIN film 3 is formed as a gate insulating film by an organic metal vapor growing method on the substrate 1. Thereafter, the surface of the film 3 is exposed with an oxygen atmosphere at 100 deg.C., thereby forming a surface oxide film 4 having 50Angstrom of thickness. Subsequently, a photoresist pattern 5 for forming a gate electrode 6 is formed of positive type resist. Then, aluminum is deposited by a resistance heating method on the whole surface of a sample. Thereafter, the pattern 5 is removed to be lifted OFF, and a gate electrode 6 is formed. Then, it can prevent electric characteristics of the AIN and a boundary between the AIN and a semiconductor from being deteriorated with a resist developer.